U.S. DEPOSITORY

CIRCULAR NO 5, REVISED EDITION

Issued August 10, 1905.

United States Department of Agriculture,

BUREAU OF ENTOMOLOGY,

L. O. HOWARD, Entomologist and Chief of Bureau.

UNIVERSITY OF FLORIDA Libraries

THE CARPET BEETLE, OR "BUFFALO MOTH."[1]

(*Anthrenus scrophulariæ* L.)

By L. O. HOWARD.

GENERAL APPEARANCE AND METHOD OF WORK.

All the year around, in well-heated houses, but more frequently in summer and fall, an active brown larva a quarter of an inch or less in length and clothed with stiff brown hairs, which are longer around the

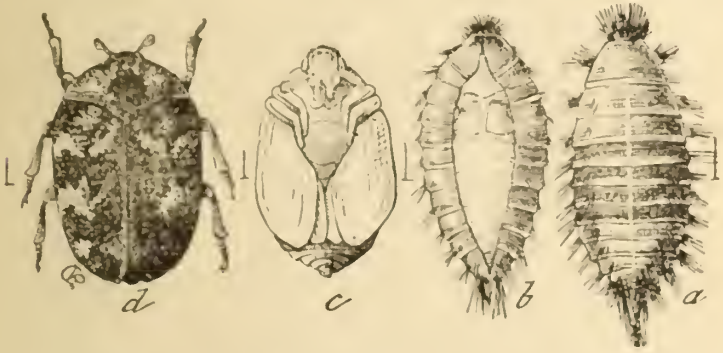

FIG. 1.—The carpet beetle (*Anthrenus scrophulariæ*). *a*, Larva, dorsal view; *b*, pupa within larval skin; *c*, pupa, ventral view; *d*, adult. All enlarged. (From Riley.)

sides and still longer at the ends than on the back, feeds upon carpets and woolen goods, working in a hidden manner from the under surface, sometimes making irregular holes, but more frequently following the line of a floor crack and cutting long slits in a carpet.

DISTRIBUTION.

This insect in the United States is known as a carpet beetle only in the northern part of the country. It is not known as a carpet beetle in Washington nor Baltimore, although in Washington and in places in the more southern States it has been occasionally met with during

[1] This circular is prepared for use in correspondence, and is a compilation only.

the past few years, both indoors and outdoors. In Philadelphia it is not common, but it abounds in New York, Boston, all the New England States, and west through Ohio, Indiana, Michigan, Wisconsin, Illinois, Iowa, and Kansas. It is originally a European insect, and is found in all parts of Europe. It was imported into this country about 1874,[1] probably almost simultaneously at New York and Boston. The *Anthrenus lepidus* of LeConte, from the Pacific coast, formerly considered as a variety of *scrophulariæ*, but now believed to be a distinct species, has not been known to attack carpets so far as we are aware.

NATURAL HISTORY AND HABITS.

The adult insect is a minute, broad-oval beetle, about three-sixteenths of an inch long, black in color, but covered with exceedingly minute scales, which give it a marbled black-and-white appearance. It has also a red stripe down the middle of the back, widening into projections at three intervals. When disturbed it "plays 'possum," folding up its legs and antennæ and feigning death. As a general thing the beetles begin to appear in the fall, and continue to issue, in heated houses, throughout the winter and following spring. Soon after issuing they pair, and the females lay their eggs in convenient spots. The eggs hatch, under favorable conditions, in a few days, and the larvæ, with plenty of food, develop quite rapidly. Their development is retarded by cold weather or by lack of food, and they remain alive in the larval state, under such conditions, and particularly in dry atmosphere, for an almost indefinite period, molting frequently and feeding upon their cast skins. Under normal conditions, however, the skin is cast about six times, and there are, probably, in the North, not more than two annual generations. When the larva reaches full growth the yellowish pupa is formed within the last larval skin. Eventually this skin splits down the back and reveals the pupa, from which the beetle emerges later. The beetles are day-flyers, and when not engaged in egg-laying are attracted to the light. They fly to the windows, and may often be found upon the sills or panes. Where they can fly out through an open window they do so, and are strongly attracted to the flowers of certain plants, particularly of the family Scrophulariaceæ, but also to certain Compositæ, such as milfoil (*Achillea millefolium*). The flowers of Spiræa are also strongly attractive to the beetles. It is probable, however, that this migration from the house takes place, under ordinary circumstances, after the eggs have been laid.

In Europe the insect is not especially noted as a household pest, and we are inclined to think that this is owing to the fact that carpets are little used. In fact, we believe that only where carpets are extensively

[1] Prof. Samuel Henshaw has recorded it from Boston, Mass., as early as 1869. (Psyche, VI, p. 372.)

used are the conditions favorable for the great increase of the insect. Carpets once put down are seldom taken up for a year, and in the meantime the insect develops uninterruptedly. Where there are polished floors and where rugs are used, or straw mattings and rugs, the rugs are often taken up and beaten, and in the same way woolens and furs are never allowed to remain undisturbed for an entire year. It is a well-known fact that the carpet habit is a bad one from other points of view, and there is little doubt that as carpets become more and more discarded in our Northern States the "Buffalo bug" will eventually cease to be a household insect of importance. The insect is known in Europe as a museum pest, but has not acquired this habit to any great extent in this country. It is known to have this habit in Cambridge, Mass., and Detroit, Mich., as well as in San Francisco, Cal., but not in other localities. In all of these three cases it has been imported from Europe in insect collections.

REMEDIES.

Thorough house cleaning.—There is no easy way to keep the carpet beetle in check. When it has once taken possession of a house nothing but the most thorough and long-continued measures will eradicate it. The practice of house-cleaning but once annually, so often carelessly and hurriedly performed, is, as we have shown above, peculiarly favorable to the development of the insect. Two house cleanings would be better than one, and if but one, it would be better to undertake it in midsummer than at any other time of the year. Where convenience or conservatism demands an adherence to the old custom, however, we have simply to insist upon extreme thoroughness and a slight variation in the customary methods. The rooms should be attended to one or two at a time. The carpets should be taken up, thoroughly beaten, and sprayed out of doors with benzine, and allowed to air for several hours. The rooms themselves should be thoroughly swept and dusted, the floors washed down with hot water, the cracks carefully cleaned out, and kerosene or benzine poured into the cracks and sprayed under the baseboards. The extreme inflammability of benzine, and even of its vapor when confined, should be remembered and fire carefully guarded against. Where the floors are poorly constructed and the cracks are wide, it will be a good idea to fill the cracks with plaster of Paris in a liquid state; this will afterwards set and lessen the number of harboring places for the insect. Before relaying the carpet, tarred roofing paper should be laid upon the floor, at least around the edges, but preferably over the entire surface, and when the carpet is relaid it will be well to tack it down rather lightly, so that it can be occasionally lifted at the edges and examined for the presence of the insect. Later in the season, if such an examination shows the insect to have made its appearance, a good though somewhat laborious remedy consists in

UNIVERSITY OF FLORIDA
3 1262 09216 5769

laying a damp cloth smoothly over the suspected spot of the carpet and ironing it with a hot iron. The steam thus generated will pass through the carpet and kill the insects immediately beneath it.

Bisulphid of carbon.—An effective method of ridding the premises of carpet beetles as well as other household insects consists in fumigation with bisulphid of carbon vapor. The employment of this substance in destroying various classes of insects is treated of in Farmers' Bulletin 145, of this Department, the method of use against household insects being given on page 21. Owing to the extremely inflammable nature of the gas great care should be taken that there is no fire in the house when the fumigation is in process. The inhaling of the vapor should also be avoided.

The hydrocyanic acid gas treatment.—Hydrocyanic acid gas has for the past ten years been used to exterminate household insect pests and other vermin, and is the most effective remedy known for this purpose. *It must be used, however, with the greatest caution, as it is extremely poisonous and deadly to human beings as well as to the lower forms of animal life.* Great care must be exercised also in handling the poisonous chemicals—potassium cyanid and sulphuric acid—used in generating the gas. Circular No. 46, Revised Edition, of this Bureau, explains fully the method of use, and this should be studied well before the treatment is undertaken.

Sulphur dioxid.—The fumes of burning sulphur, consisting of sulphur dioxid with some sulphur trioxid, have been in use for many years for the destruction of insect pests of the household, notably the bedbug, and will undoubtedly kill the carpet beetle as well if the fumigation is thorough. Its use is explained on pages 44 and 45 of Farmers' Bulletin 127, Second Revision, of this Department.

PREVENTIVES.

The only hope of the good housekeeper where the system of heavy carpets covering the entire floor surface is adhered to lies in the strenuous measures explained above. Good housekeepers are conservative people, but we expect eventually to see a general adoption of the rug or of the square of carpet, which may be readily examined at all times and treated if found necessary. Where the floors are bad the practice of laying straw mattings under the rugs produces a sightly appearance, and, while not as cleanly as a bare floor, affords still fewer harboring places for this insect.

Approved:

JAMES WILSON,
Secretary of Agriculture.

WASHINGTON, D. C., *July 16, 1908.*

○